What is claimed is:

1. A computer-implemented method of profiling software comprising:
identifying a candidate reuse region;
determining an input set for the candidate reuse region;
instrumenting the software to profile set-values for the input set; and
executing the instrumented software.

2. The computer-implemented method of claim 1 further comprising:
identifying a candidate load instruction within the candidate reuse region; and
instrumenting the software to profile location-values for the candidate load instruction.

3. The computer-implemented method of claim 1 wherein the input set comprises a plurality of input registers, and each set-value comprises an input register value for each of the plurality of input registers, the method further comprising:
for each set-value, combining each of the input register values into a single value.

4. The computer-implemented method of claim 3 wherein combining comprises:
folding each of the input register values to create folded values; and
concatenating the folded values.

5. The computer-implemented method of claim 1 wherein instrumenting comprises inserting instructions to periodically sample set-values.

6. The computer-implemented method of claim 5 wherein the input-set comprises a plurality of input registers, and each set-value comprises an input

register value for each of the plurality of input registers, and wherein instrumenting further comprises:

inserting instructions to combine each of the input register values into a single value; and

inserting instructions to index into a data structure of profile indicators using the single value.

7. The computer implemented method of claim 5 wherein instrumenting further comprises:

inserting instructions to profile the top N occurring set-values, where N is chosen as a function of an expected number of reuse instances.

8. The computer-implemented method of claim 1 further comprising selecting the candidate reuse region as a computation reuse region.

9. A machine readable medium including instructions for a method of profiling software, the method comprising:

identifying a candidate reuse region;

determining an input set for the candidate reuse region;

instrumenting the software to profile set-values for the input set; and

executing the instrumented software.

10. The machine readable medium of claim 9 wherein instrumenting comprises:

inserting instructions to periodically sample set-values.

11. A computer-implemented method of profiling software comprising:

periodically sampling registers to obtain register values; and

storing an occurrence frequency of the register values in a data structure.

12. The computer-implemented method of claim 11 wherein periodically sampling comprises:

sampling a plurality of registers to obtain a set-value every S occurrences of a candidate reuse region, where S is a sampling period.

13. The computer-implemented method of claim 12 further comprising:

identifying a group of control equivalent candidate region entries and candidate load instructions;

inserting instructions prior to the group, wherein the instructions set a predicate register every S occurrences; and

inserting profiling instructions at each of the control equivalent candidate region entries and candidate load instructions, wherein the profiling instructions are predicated on the predicate register.

14. The computer-implemented method of claim 12 wherein storing comprises:

accessing a record in the data structure as a function of the set-value; and

incrementing a profile indicator at the record.

15. The computer-implemented method of claim 12 wherein periodically sampling further comprises sampling set-values in the plurality of registers at the beginning of a candidate reuse region, the plurality of registers being input registers to the candidate reuse region.

16. A computer-implemented method of profiling software comprising:

identifying a candidate load instruction;

instrumenting the software to sample a location-value every S occurrences of the candidate load instruction; and

executing the software.

17. The computer-implemented method of claim 16 wherein instrumenting comprises:

inserting instructions in the software to count the number of times each location-value is sampled; and

inserting instructions in the software to keep track of top location-values.

18. The computer-implemented method of claim 16 further comprising:

identifying a group of control equivalent candidate region entries and candidate load instructions;

inserting instructions prior to the group, wherein the instructions set a predicate register every S occurrences; and

inserting profiling instructions at each of the control equivalent candidate region entries and candidate load instructions, wherein the profiling instructions are predicated on the predicated register.

19. The computer-implemented method of claim 17 wherein the candidate region includes a plurality of candidate load instructions, each of the plurality of load instructions being predicated on a common predicate register.

20. The computer-implemented method of claim 17 wherein inserting instructions to keep track of top location-values includes inserting sampling instructions configured to profile the top N occurrences of location-values, where N is an integer.

21. A machine readable medium including instructions for a method of profiling software, the method comprising:

identifying a candidate load instruction;

instrumenting the software to sample a location-value every S occurrences of the candidate load instruction; and

executing the software.

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22. The machine readable medium of claim 21 wherein instrumenting comprises inserting instructions in the software to count the number of times each location-value is encountered.

23. A computer-implemented method of selecting reuse regions within a software program, the method comprising:

profiling top set-values for candidate reuse regions to produce a probability of top set-values; and

selecting reuse regions as a function of the probability of top set-values.

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24. The computer-implemented method of claim 23 wherein profiling set-values comprises:

representing each top set-value as a single value; and

accessing a data structure as a function of the single value to modify a profile indicator.

25. The computer-implemented method of claim 24 wherein accessing a data structure comprises accessing a data structure at least as large as a number of expected reuse instances.

26. The computer-implemented method of claim 25 wherein selecting comprises marking as reuse regions those candidate reuse regions having a finite number of top set-values that have a probability of occurrence greater than a threshold.

27. A machine readable medium including instructions for a method of selecting reuse regions within a software program, the method comprising:

profiling top set-values for candidate reuse regions to produce a probability of top set-values; and

selecting reuse regions as a function of the probability of top set-values.

28. The machine readable medium of claim 27 wherein profiling set-values comprises:

representing each top set-value as a single value; and

accessing a data structure as a function of the single value to modify a profile indicator.